

# NASA TECH BRIEF

*Lewis Research Center*



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## New Tantalum Alloy Has Superior Creep Resistance and Good Workability

A developmental program on refractory metal alloys produced a significant advance in tantalum technology—ASTAR-811C (Ta-8W-1Re-0.7Hf-0.025C), a carbide-strengthened tantalum alloy with better creep resistance than commercially available tantalum alloys and good fabricating and welding characteristics.

The ductility and fabricating characteristics of the new alloy are similar to Ta-8W-2Hf, a commercially available alloy, yet the creep strength of the new alloy at 1589°K (2400°F) is approximately double that of the commercial alloy.

The ASTAR-811C composition was scaled-up to 10.2 cm (4 in.) diameter ingots, which were then processed to 0.102 cm (0.040 in.) thick sheets for subsequent evaluation. Short-term tensile properties, recrystallization, grain-growth behavior, weldability, and creep properties were determined. The results show that ASTAR-811C has useful strength to approximately 1922°K (3000°F), and can be scaled up to larger ingots.

### Note:

The following documentation may be obtained from:

National Technical Information Service  
Springfield, Virginia 22151  
Single document price \$3.00  
(or microfiche \$0.95)

### Reference:

NASA-CR-1641, Precipitation-Strengthened  
Tantalum Base Alloy ASTAR-811C

### Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)], to the Westinghouse Electrical Corp., Pittsburgh, Pennsylvania 15236.

Source: R.W. Buckman, Jr., of  
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